

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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Owing to the Christmas Holidays all Editorial and Advertisement matter must reach the offices of "Flight" by first post Monday, December 17, for the issue dated December 20, and by first post Thursday, December 20, for the issue dated December 27.

EDITORIAL COMMENT.



The Cross-Channel Flight

JUST as the first cross-Channel flight by M. Louis Blériot in 1909 marked a new stage in the development of aviation, so, we think, will the flight by Cobham from London to Brussels last Saturday be found to have marked another milestone on the road of aviation progress. There was nothing spectacular about the flight, and no elaborate preparations were made, with vessels patrolling the Channel, ships, coastguard stations and lighthouse keepers asked to keep a look-out. In fact, no preparations of any sort were elaborated beyond getting the machine ready and obtaining weather reports from the Air Ministry, as is done for every flight of the regular commercial air liners. And there were no outstanding incidents on the journey. The whole thing boils down to this: the De Havilland Aircraft Co. had decided to exhibit one of their light 'planes at the Brussels Motor Show, and flying it over was the simplest way of getting it there. In stating this we do not in any way intend to detract from the merit of the flight. On the contrary, the very fact that it was decided to fly the machine over just in the ordinary course proves the faith of the constructors in their machine, and at the same time the flight has demonstrated that the light 'plane is not merely a toy, very handy for flying around an aerodrome, but that it is of very great practical value for cross-country flying.

The month of December is one of the worst for flying, especially across the Channel and the northern part of France and Belgium. Yet Cobham got through without other hitch than one hour's halt at Lympne. To those who have followed the development of the light 'plane, and who watched its behaviour

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

1923

Dec. 14 "Leader Cable Systems for Electrical Steering of Aeroplanes," by J. Gray, before I.Ae.E.

1924

Jan. 9 "Water-Cooled Aero Engines," by A. J. Rowledge, before Inst. of Automobile Engineers

Jan. 10 "Materials from the Aeronautical Point of View," by Dr. Aitchison and Mr. North before R.Ae.S.

Jan. 24 "Fabric and Dopes," by Dr. Ramsbottom, before R.Ae.S.

Feb. 7 "Airmanship at Sea," by Sqd.-Ldr. Maycock, O.B.E., R.A.F., before R.Ae.S.

Feb. 21 "Aerial Photography and Survey," by Mr. H. Hamshaw Thomas, before R.Ae.S.

Mar. 1 French Aero Engine Competition

Mar. 6 "Sound Detection," by Major Tucker, before R.Ae.S.

Mar. 20 "The Report of the Aeronautical Research Committee's Panel on Scale Effect," by Capt. W. S. Farren

during the week at Lympne, it was evident that this type of machine had great possibilities. Yet it is fairly safe to assume that Cobham's flight on Saturday will have done more to bring home to the general public the safety and utility of the light 'plane than would have done a dozen competitions—just as Blériot's cross-Channel flight in 1909 made the man-in-the-street realise that the aeroplane had, or was about to, destroy our insular security. It is for this reason that we think Mr. Cobham and the De Havilland Co. deserve credit for having, without fuss of any sort, undertaken the flight.

From a technical point of view the flight is of interest in showing that, even with a motor-cycle engine, it is possible to undertake long cross-country flights without undue risk of trouble. It is true that there was an element of danger in the cross-Channel stretch of the journey. It must be remembered that the Blackburne engine has but two cylinders. If, therefore, but a single plug had sooted-up, or a single valve stuck, the engine power would have been reduced by rather more than half. On the face of it, therefore, it might appear that tackling a 20-mile stretch of sea was a hazardous undertaking, and perhaps in a sense it was. But it should be remembered—and that is a feature of the light 'plane of which sight is apt to be lost—that so efficient are these little machines that they will fly level on certainly considerably less than 50 per cent. of their engine power. Thus the power reserve is actually as great as that of larger machines, and probably greater than that of most. Practical experience has shown that several of these light 'planes are capable of flying with but one cylinder firing, showing that the power reserve is sufficient. Not only so, but, surprising as it may seem, the vibration set up by the unbalanced engine is much smaller than one would expect, certainly not in any way sufficient to "shake the machine to pieces," as some critics had predicted it would.

From all points of view, therefore, the flight was a meritorious one, and we feel sure all our readers will join us in congratulating those responsible for it on having brought it to a successful conclusion.

The Duke of Sutherland Goes to America

His Grace the Duke of Sutherland, Under-Secretary of State for Air, left on December 12 for the United States on a semi-official visit to some of the American air stations. It is understood that His Grace will particularly study American airship development, and in view of the policy outlined by Sir Samuel Hoare before the Dominion Prime Ministers, in which the Secretary of State for Air expressed Britain's determination to resume airship work, with their help if possible, but without it if necessary, the visit of the Duke of Sutherland is of considerable significance. Needless to say, Britain could not have sent a more suitable envoy. His Grace has a charm of manner which wins him friends wherever he goes, and he combines with that quality a very sound practical knowledge of aviation questions, as was repeatedly demonstrated at the Lympne meeting. Incidentally, it may be assumed that the Under-Secretary of State for Air will be plied with questions relating to light 'planes, a type of machine of which he has made himself the champion, and which owes most of its present development to his encouragement, as America is just getting interested in this latest phase of aviation. Thus an

exchange of ideas on such widely different subjects as large airships and light aeroplanes may be expected to result in doing good all round. It is understood that His Grace will be absent for a little more than three weeks, but that he will be back in time for the opening of Parliament.

Still "Motor Gliding"

Now that the Royal Aero Club has officially dropped that horrible expression "motor-glider," originally adopted out of deference to a certain daily paper which had offered a prize for a light 'plane competition, surely it is time that editors of dailies kept a check on the compilers of their "stunt" headlines. In all fairness, it must be admitted that the majority of dailies have at last realised the absurdity of talking about motor-gliders, and have adopted the only logical term—light aeroplanes—first suggested by FLIGHT many months ago. There are, however, still a few offenders, and one evening paper last week again committed the folly, in writing of Cobham's flight, of using expressions like "Non-stop glide to Brussels," "motor-glider with tiny motor-cycle engine," "first time an Englishman has crossed the Channel on a glider," and so forth. The daily is one that should know better, and it is to be hoped that sub-editors of dailies generally should be warned to sit up and take notice for the future.

Exit Helicopter

It is interesting, and significant, that the United States, after spending a considerable amount of money on helicopter development, has now removed the experimental contraption from its shed and deposited it in a museum. In the November 19 issue of our American contemporary *Aviation* is found the following editorial comment: "The news that the hangar which used to house the 'hush-hush' helicopter of McCook Field will be converted into a swimming pool accompanies the announcement that this direct lift machine will henceforth be seen in the Air Service Technical Museum. The temptation is great to say that in this way some use will be made of the money spent on the D.B. helicopter, and that a swimming pool is a better asset to a flying field than a helicopter hangar. However, there is another angle to this controversial question. Suppose for a moment that some foreign helicopter had suddenly displayed an astonishing performance, and nothing had been done by the Air Service to study the possibilities of such an aircraft. The inference is clear: public clamour would have rent the skies as to our backwardness in aeronautical development and our lack of foresight. Two hundred thousand dollars spent in an endeavour to 'lift off' vertically to a height of under 10 ft. may seem a bit extravagant; but, on the other side of the ledger, stands the fact that the Air Service now knows what it can expect of a helicopter. And that is all to the good."

These views tally so exactly with those which we have expressed repeatedly in these columns, almost in the same words, that we cannot help feeling a certain amount of satisfaction. The Council of the Royal Aeronautical Society appear to hold similar views, and have made representations to the Air Ministry on the question of their offer of £50,000 for a British helicopter, pointing out the much greater need for research along lines offering greater promise of sound development.

THE BARLING BOMBER

An American Six-Engined Giant

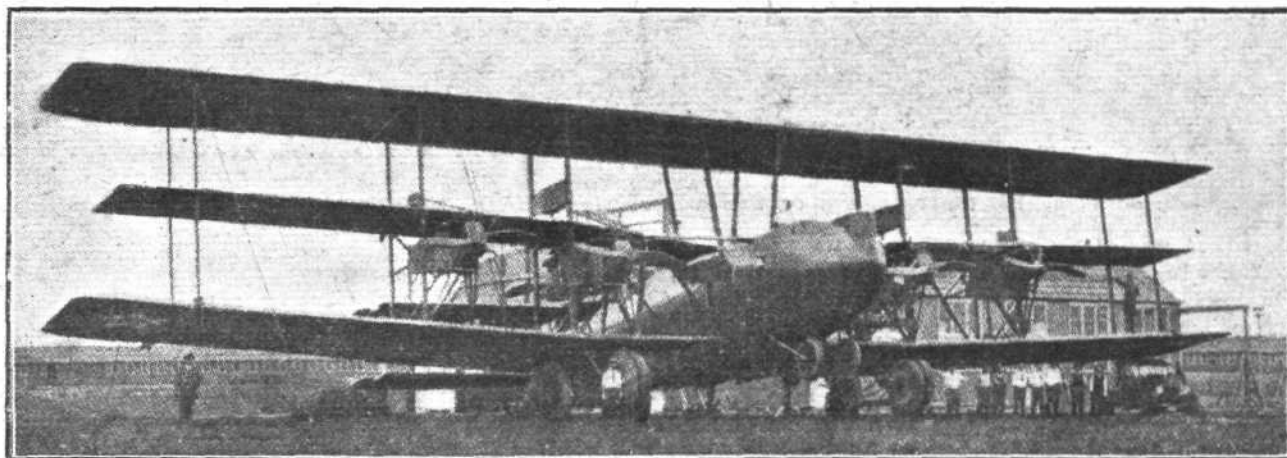
WHAT is described as the world's largest aeroplane was constructed and tested at the U.S. Army Air Service Depot, Wilbur Wright Field, Dayton, during last summer. This machine is officially designated the N.B.L.-1, but is perhaps better known as the Barling Bomber, after its designer, Walter H. Barling, who was, we believe, associated with the Tarrant "Tabor" triplane built in this country in 1919. N.B.L.-1 was built by the Wittemann Aircraft Corporation.

The Barling bomber is a triplane—or, as may be seen from the accompanying illustrations, a two-and-a-half plane, as the middle plane is of comparatively narrow chord. The overall span of the main planes is 120 ft. and their chord 13 ft. 6 ins., whilst the span and chord of the middle plane are 111 ft. and 10 ft. respectively. It is fitted with six Liberty engines, mounted on the wings just below the middle wings, two arranged in tandem on each side and nearest to the fuselage, and the remaining two singly farther out towards the tips.

separate the planes of the centre section on each side of the fuselage, and a further two pairs of struts support the centre of the top plane above the fuselage. Ailerons are fitted to the top and bottom planes only, and there is thus little or no interference with the narrow chord middle plane. The lower plane is set at a dihedral angle of about 3°.

The six 400 h.p. Liberty engines are mounted in four nacelles, two on each side of the fuselage between the lower and the mid planes. They are placed sufficiently far apart that, should it be desired to fit larger engines at any time, there is sufficient space for 18-ft. air screws to be fitted. In the two nacelles nearest the fuselage two engines are placed in tandem end to end, the front ones driving tractor screws, and the rear ones pusher screws. Each of the two outer nacelles has a single engine driving a tractor screw.

As the loads on this machine are large, and frequent change of pilots would be necessary on long flights, dual control sets



THE BARLING BOMBER : Three-quarter front view of this 120-ft.-span giant, which is fitted with six 400 h.p. Liberty engines.

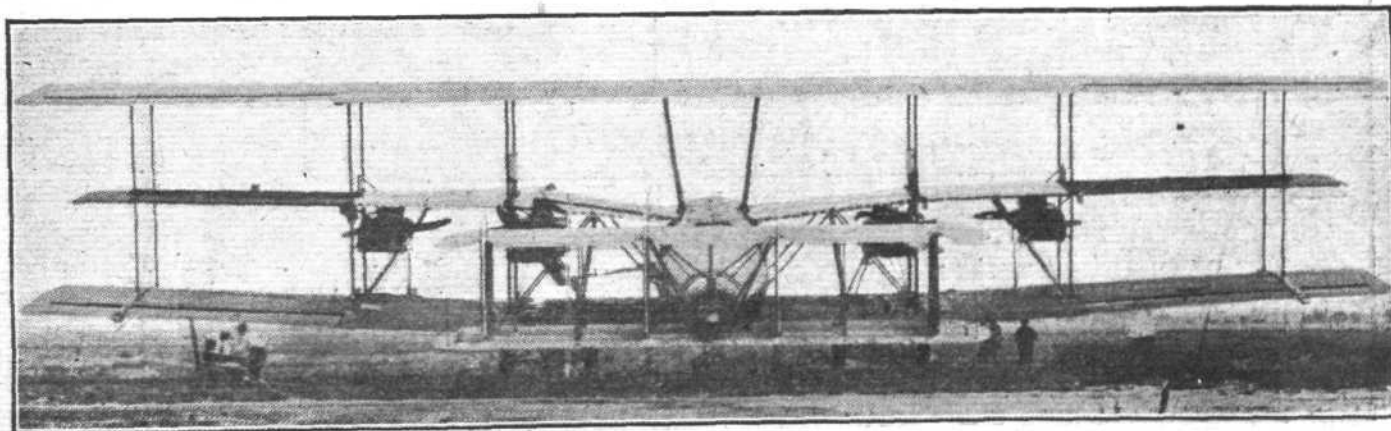
The materials used throughout the ship are of the "safety first" type. The basic material is spruce, which is more reliable than other aircraft material. Nearly all the main fittings are of 60,000 lb. steel, and duralumin is used for pulley brackets and other parts coming under relatively low stresses. Bakelite pulleys, with ball bearings, are used throughout the controls.

It is claimed for the arrangement of the main planes that the combined advantages of biplane and triplane systems are obtained. For instance, whilst the triplane arrangement provides a smaller span, the reduced middle plane lessens the overall height of usual triplane construction and thus ensures safer taxiing and landing. Again, the erection of the machine is easier than would be the case of a large-gap biplane, and the engine support is improved by this triplane construction.

As will be seen, all three planes are in three sections, an inner one including fuselage, landing gear, and the two pairs of tandem engines; and two outer sections, each carrying one of the two remaining engines. Two pairs of interplane struts

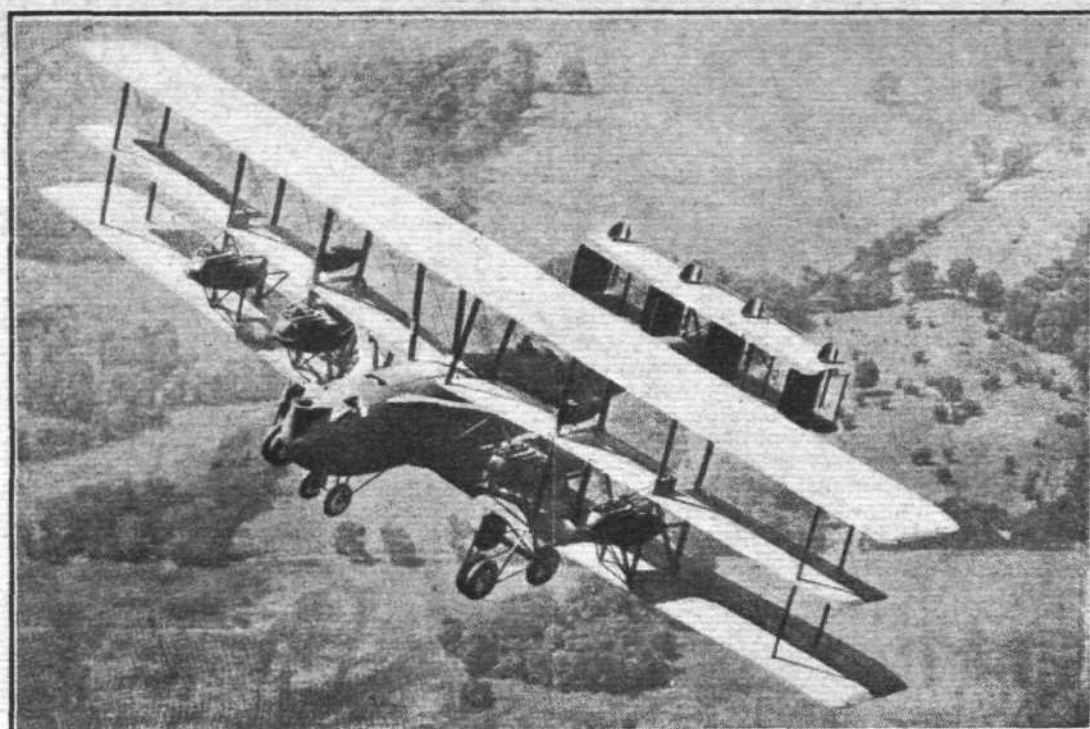
are provided for two pilots, sitting side by side. A control lever in the pilot's cockpit regulates the operation of the engines, a forward movement of this lever opening the throttles of all six engines, and a backward movement closing them. A lateral movement of the lever opens the throttles of the engines on that particular side only, whilst by a diagonal movement of the lever the engines on one side are partially throttled, while those on the other side are kept open.

The pilot's instrument-board is naturally somewhat elaborate, as may be seen from one of our illustrations. There are six engine revolution indicators, three on each side, an air-speed indicator, a turn indicator which gyroscopically indicates any rotating motion about a vertical axis, an altimeter, clock, etc. The engineer's controls are arranged in two banks, those for the three-port engines being to the left, and those for the starboard engines being on the right. Each engine has a throttle, mixture, ignition, and shutter control. The latter provides a micrometer adjustment, and has emergency clutches, so that any engine may be used in case of



THE BARLING BOMBER : Rear view of the machine.

The Barling
 Bomber: A view
 of the machine,
 taken from the
 air, in flight
 during its maiden
 trip on August 22.
 Lieuts. Harold R.
 Harris and M. S.
 Fairchild piloted
 the machine, and
 Douglas Culver,
 McCook Field
 mechanic, was
 in charge of the
 engines, whilst
 Walter H. Barling
 was passenger.



damage, independent of the other engines or the master control.

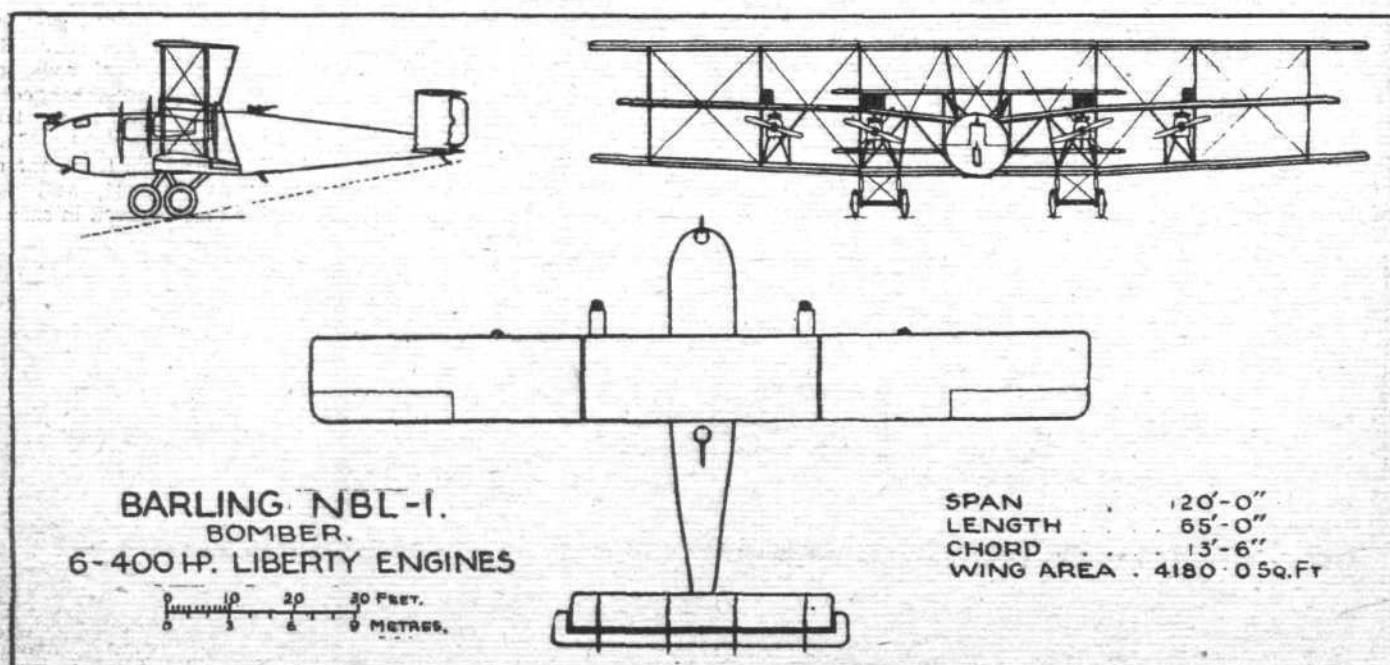
The fuselage, which is built in sections, is of the semi-monocoque type, the outer covering of veneer being strengthened by longerons and bulkheads. One of the accompanying illustrations, showing the interior of the fuselage, will give a general idea of the form of construction employed. It is stated that there are no vital longerons or wires, which if shot away would place the machine out of action. The fuselage has a maximum diameter of 10 ft., and is of circular section of good streamline form. Provision is made for seven guns, which are operated from five cockpits, so located that they cover practically the whole field of approach. One of these gun positions is located in the extreme nose of the fuselage, with another one immediately underneath it, firing below the fuselage. Two others are situated back of the main planes, one at the top and one at the bottom of the fuselage.

The bomber's compartment is shown in one of our illustrations, from which it will be seen that the bomber sits on a bicycle-saddle type seat and operates the bomb sight mounted over a window in the floor. The bomb-release levers may be seen on the right, and the various instruments on the left. The bomb crates are below the petrol tanks, and in the bottom of the fuselage are trap doors enabling the bombs to fall

freely when released. A walkway on each side gives free access to any part of the machine.

The tail is a biplane structure, with an adjustable incidence, controlled from the cockpit, a special thin wing section being employed. There are four rudders and fins, similar in size and shape, the fins also serving as interplane struts. Owing to the size of the tail planes, the problem of providing for adjustable stabilisers presented some difficulty, for it may be noted that the overall span of the tail is some 45 ft., and the combined areas of the stabilisers and elevators is 575 sq. ft.; the fins and rudders have an area of 250 sq. ft. Except for the ribs and covering, the tail surfaces are of metal construction.

Not the least interesting feature of the Barling bomber is the landing gear, which in a machine of this size naturally presents many unusual problems. The Barling landing gear consists of two four-wheeled "trucks," one under each of the inner engine groups, all four wheels being 60-in. by 12-in. Palmer aero type. Each truck has two wheels close together on the front axle and two on the rear axle. On landing, means is provided for lowering, from the pilot's cockpit, the front wheels, so that these come into contact with the ground first, the energy of landing being absorbed by means of long-stroke oil cylinders. The rear wheels, which are sprung by rubber shock absorbers of the endless ring type, then come into action, and the machine settles down on these wheels and the tail

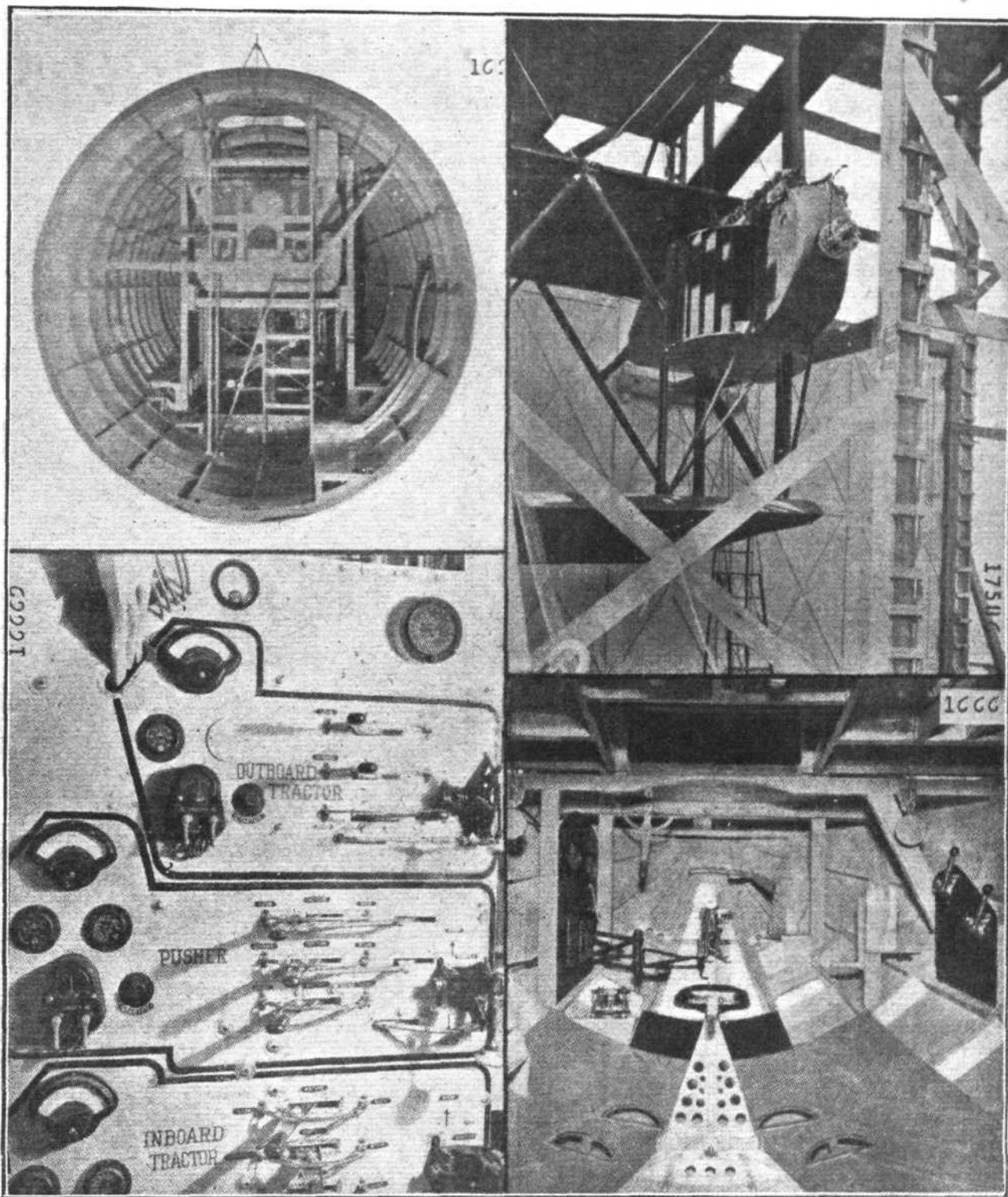


THE BARLING BOMBER, N.B.L.-1 : General arrangement drawings, to scale.

skid. Taxying is done on the rear wheels. A pair of emergency wheels mounted on the nose of the fuselage prevent the machine from "digging in."

The tail skid is also an interesting feature. This is of all-metal construction, the skid proper being an aluminium alloy

flight was successful in every way, surpassing the expectations of its designer and the U.S. Air Service. The ease with which it manœuvred, both on the ground and in the air, the 10-second take-off and its 60 m.p.h. landing were the outstanding features. The altitude attained on this occasion was 2,500 ft.



THE BARLING BOMBER: Some details: 1. An internal view of the fuselage. 2. One of the engine mountings. 3. The engineer's controls. 4. The bomber's compartment.

"boat," armoured with steel straps and having a steel keel. This "boat" swivels on a support attached to a cross axle, which is prevented from motion by means of rubber cords.

As regards the performance of the N.B.L.-1, with full capacity of petrol (2,000 gals. or 6 tons) and oil (181 gals. or 1,356 lbs.), it is capable of flying at full speed, 90 m.p.h., for a duration of about 12 hours. The minimum crew necessary to operate the machine consists of four men. Specifications require a maximum of 5,000 lbs. of bombs to be carried, but it will be possible to carry a 10,000-lb. bomb, for a duration flight of 2 hours. The total weight of this machine, fully loaded, comes out at about 40,000 lbs. (18 tons).

The Barling bomber made its maiden flight, lasting 28 minutes, on August 22 last, at Wilbur Wright Field. This

The principal characteristics of the N.B.L.-1 are as follows:—

Overall span	120 ft.
Overall length	65 ft.
Overall height	27 ft. 9 ins.
Chord	13 ft. 6 ins.
Area of main planes (approx.)	4,180 sq. ft.
Area of stabilisers and elevators	575 sq. ft.
Area of fins and rudders	250 sq. ft.
Weight loaded	40,000 lbs.
Loading per h.p. (approx.)	16.5 lbs.
Loading per sq. ft. (approx.)	9.5 lbs.
Petrol capacity	13,440 lbs. (2,000 gals.)
Oil capacity	1,356 lbs. (181 gals.)
Speed range	60-90 m.p.h.

AN IMPROVED REVOLUTION COUNTER

By B. K. JOHNSON

[THE following brief description of an optical revolution counter has been received from Mr. B. K. Johnson, of the Department of Optical Engineering at the Imperial College of Science and Technology, South Kensington, who has designed and provisionally protected the instrument.—ED.]

During the course of some recent research work I found it necessary to employ a revolution counter which had no actual contact with the object whose speed of rotation I wished to measure. Other conditions also prevented me from using the better-known stroboscopic methods of taking such measurements, such as quickly moving slits, the flickering lamp type, or Drysdale's discs, with the result that these restrictions accounted for the development of the instrument here described.

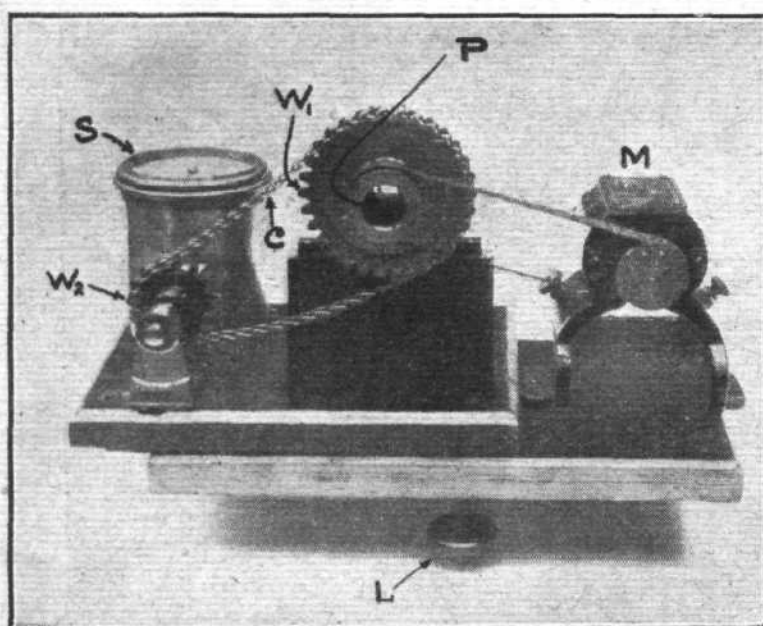
As this instrument is also useful for observing the behaviour of objects revolving at high speed besides that of actually recording their speed of rotation (for instance, aeroplane

of rotation of the prism may be regulated whilst observation is being taken.

S is a speed indicator geared up at 2 to 1 to the prism by means of the chain C and second toothed-wheel W_2 . This is done so that the indicator may read the actual speed of the "object."

The shaft on which W_2 is mounted also rotates in ball bearings, and a dog-clutch connects the indicator to the shaft.

When using the instrument the observer directs the axis of the prism towards the object until the eccentric movement of the latter appears to cease. This is quite easily and quickly done. For this purpose, however, the levelling screw L is provided for vertical adjustment, whilst lateral adjustment can be quite conveniently obtained by moving the whole instrument slowly by hand. The speed of the prism is then adjusted until the object appears stationary, at which instant the speed of the object is read off on the dial S.



An Optical Revolution Counter : This photograph shows the actual instrument (single-prism type).

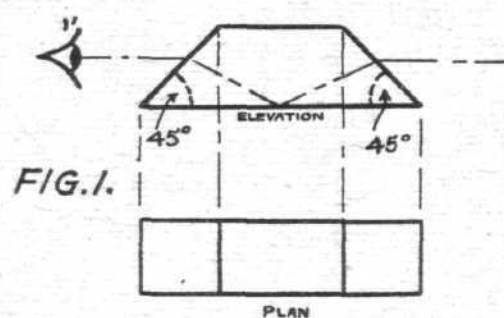


FIG. 1.

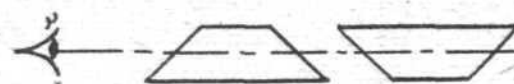


FIG. 3.

An Optical Revolution Counter : Fig. 1 shows plan and elevation of 45 degree prism, while in Fig. 3 is shown method of mounting two prisms revolving at the same speed but in opposite directions, having the effect of causing the object to appear to revolve at four times the speed of the prisms.

propellers), I thought this article might be of interest to aircraft engineers generally.

The principle is based on the use of the optical prism shown in Fig. 1, which has the property that when rotated completely once, the object (as seen through the prism) appears to revolve twice; and in the same direction as that of the prism. If, therefore, a rotating object is looked at through the prism whilst the latter itself is rotating also, the object can be made to appear stationary when the correct speed of the prism is attained, and when this is the case, obviously the prism will be revolving at just half the speed of the object.

The mechanical method for obtaining these conditions are shown in Fig. 2. The prism P (as depicted in Fig. 1) is mounted in a tube, which rotates in a steel ball-race secured conveniently to the base of the instrument. This tube, with the toothed-wheel W_1 attached to it, is driven by the motor M which has a variable resistance in its circuit, so that the speed

It will be understood, of course, that the illustration shows the instrument only in its experimental stage, as I used it to test its practicability, and not as a finished commercial article. Naturally, many improvements have since been made and incorporated in the final specification. In conclusion, it may be mentioned that two such prisms, mounted as shown in Fig. 3 and made to revolve at the same speed but in opposite directions, will appear to make objects (as seen through the combination) rotate at four times the speed of the prisms. This means, of course, that the instrument has even a bigger range of speeds, and, consequently, materially increases its usefulness. This latter improvement is now under the course of construction. The single prism type of instrument has been "tried out" and will read up to 5,000 revolutions per minute, and, consequently, the double-prism type, when tested, will probably read up to 10,000 revolutions per minute.

5,414 Majority

WHATEVER may be the fate of the present Government, it is good to see that our very excellent Air Minister, Sir Samuel Hoare, was returned at Chelsea with a majority of 5,414. Thus, no matter what changes may come about, we shall have, in Sir Samuel, a worthy champion of the cause of aviation in the House.

Refuelling in the Air

FOR the first time in Europe two French aviators succeeded, on December 5, in transferring petrol from one aeroplane to another while in flight. The feat has been accomplished repeatedly in America, and the French success

further confirms the possibility of applying in a practical manner this form of refuelling to military and civilian aircraft. The French officers who carried out the experiment at Le Bourget were Capt. Weiss and Adjutant Vancaudenberg. Contact between the two machines was maintained for about five minutes.

Speed Record Homologated

THE world's speed record established by Ensign A. J. Williams, of the U.S. Navy Air Service, on November 4, 1923, at Mineola, L.I., has been homologated by the F.A.I. The record was established over the new 3-kilometre course, and the average speed was 429.025 kms. (266.2 m.p.h.).

LIGHT 'PLANE AND GLIDER NOTES

Those wishing to get in touch with others interested in matters relating to gliding and the construction of gliders are invited to write to the Editor of FLIGHT, who will be pleased to publish such communications on this page, in order to bring together those who would like to co-operate, either in forming gliding clubs or in private collaboration.

LAST week we were able to announce in these notes that a de Havilland 53 light monoplane was to be exhibited at the Brussels Automobile Exhibition. Since then our readers will have read in the daily press the account of Mr. Alan Cobham's flight from London to Brussels in the tiny D.H. machine, with 7 h.p. Blackburne engine. It had originally been planned that Cobham should make the flight on Friday, December 7, but on that day there was so much fog about that it would have been extremely unwise to commence the flight. On Saturday, December 8, conditions were slightly better, although far from being favourable, and Cobham left the Stag Lane aerodrome during the morning, calling at the Croydon aerodrome in order to pass his Customs examination.

LEAVING Croydon shortly before 10 a.m., Cobham headed for the coast, but the visibility was so bad, owing to thick fog, that he decided to land at Lympe until conditions improved. After spending an hour or so at Lympe, the weather cleared somewhat, and Cobham decided to resume his journey. Getting away a few minutes past noon, he headed for Dover and began the Channel crossing in fairly good weather.

In mid-Channel Cobham ran into a heavy rainstorm, accompanied by low clouds. Nevertheless, he stuck to his task, and continued onward in spite of the rain and bad conditions generally. Some 20 minutes after leaving Dover he reached the other side near Calais, and turned north-east, towards Dunkirk. The visibility was still far from good, and Cobham had to fly very low. However, passing over Dunkirk, Dixmude, and Ghent he reached the Haren aerodrome at Brussels at 3 p.m., and landed safely. The distance from Lympe is approximately 150 miles, so that the average speed works out at about 50 m.p.h., which is not bad considering the unfavourable weather conditions.

THE amount of fuel used for the trip was in the neighbourhood of four gallons, so that the actual cost of fuel and oil must certainly have been less than 10s. Naturally, to this should be added depreciation, wear and tear, insurance, etc., but the flight does demonstrate not only the capacity of the light 'plane for cross-country flying, and even international flying, but also that the cost of running a light 'plane is very small indeed, and compares not unfavourably with the cost of running a small motor-car.

THE flight reflects the greatest credit, not only on the pilot and on the de Havilland Aircraft Company, but also on the makers of the Blackburne engine, which ran without a hitch the whole way. This is not surprising when it is remembered that at the Lympe competitions Mr. Hinkler covered 1,000 miles in one week on his Avro monoplane, which was fitted with a Blackburne engine. It is worthy of note that throughout the week Hinkler did not have a single forced landing, his Blackburne running splendidly the whole time.

As a piece of propaganda work, not only for the machine in question, the D.H. 53, but for the light 'plane in general, the flight cannot fail to have done a great deal of good, and the fact that the machine is exhibited at the Brussels automobile show will afford a number of people an opportunity of examining a very excellent example of the quality of British light 'planes. The machine is the one flown by Capt. Broad at Lympe (No. 8), and is christened "The Humming Bird." It has been polished up a bit for the show, and a fairing has been added behind the pilot's head so as to reduce the resistance slightly. Otherwise, the machine is as it was at the Hendon meeting in October, with the Blackburne engine mounted upside down.

THE rules governing the French Tour de France, which is to be flown in August, 1924, have now been drafted by the Association Française Aérienne, and have been submitted to the Commission Sportive of the French Aero Club for approval. At the moment full details are not available, but it is believed that the engine capacity of the competing light 'planes will be

limited to 2 litres (2,000 c.c.) for single-seaters and to 3 litres for two-seaters. This, it will be seen, is well above the maximum capacity permitted for the British tests next year (1,100 c.c. for two-seaters), and may prove a serious handicap to any British entrant who intends to compete in the French trials, unless a larger engine be specially fitted for the purpose.

ELIMINATING trials are to be held before the start of the actual circuit of France, and these will, it is believed, include a consumption test, a climbing test, and a landing test. Competitors will be required to empty their tanks completely, when they will be replenished with a measured quantity of petrol, 16 kgs. (35.2 lbs.) in the case of single-seaters and 24 kgs. (52.8 lbs.) for two-seaters. Competitors will then be required to cover a flight of 50 kms. (31 miles) over a course marked out on the aerodrome by pylons, and climb to an altitude of 2,000 m. (6,560 ft.). The time allowed for both tests will probably be two hours, but the 50-km. circuit must be flown first, and the altitude test then carried out. Competitors will not, however, be required to land between the two tests.

ON landing after the tests the amount of fuel left in the tanks will be measured, and the amount consumed during the circuit and altitude flights must not exceed 8 kgs. (17.6 lbs.) for the single-seaters and 12 kgs. (26.4 lbs.) for the two-seaters.

ON coming down after the altitude test, competitors will be required to make a landing on a space marked out on the aerodrome, and this space will be kept fairly small so as to imitate to some extent a forced landing in a small field. This is, presumably, to ensure that the competing machines may, if found necessary, be forced-landed during the actual competition with reasonable safety.

THE actual Circuit of France will cover a total distance of approximately 1,500 kms. (930 miles), and will be flown in seven or eight stages, of which the longest will probably be in the neighbourhood of 250 kms. (155 miles), and the shortest about 120 kms. (74.4 miles). Intermediate landings en route will be allowed, and the prizes will be awarded partly for best performance over the single stages and partly for best all-round performance over the whole of the course. It is hoped that further particulars will be available shortly, when the French Aero Club has approved (or amended) the regulations suggested.

At the moment of going to press there is no further news of the proposed attempt, announced in the Official Notices of the Royal Aero Club last week, by Mr. Gray of Berwick-on-Tweed to win the prize offered by Mr. Gordon Selfridge for a flight of 50 miles on a glider. The offer is of £1,000, but, failing a flight of the distance mentioned, £500 is offered for the pilot covering the greatest distance in 1923, provided the distance exceeds 25 miles. The task is a very difficult one, and if the prize should not be won it would, we think, be no bad plan if Mr. Selfridge could be induced to transfer his very generous offer to the light 'plane field, for some specially meritorious performance during 1924.

SOME weeks ago it was mentioned in these columns that Lieut. Thoret had taken a Dewoitine light 'plane and two Dewoitine gliders to Prague, in order to demonstrate them before the Czecho-Slovakian aviation authorities. Lieut. Thoret has already made several flights on the light 'plane, and we understand that it is intended to start a light 'plane flying school near Prague. Lieut. Thoret has also been authorised to search the country for a suitable locality for gliding experiments, and it is expected that if a favourable place can be found a series of competitions will be held, and possibly a gliding school opened.

IN Switzerland gliding is being taken up again after the lull which followed the first experiments in 1921. Three mono-planes are being built, designed by MM. Honegger, Piguet, and Divorve. It is expected that experiments will be carried out from Mont Saleve, which has at its summit a plateau more than one mile in length, and over which northerly winds give rise to very strong up-currents. The construction of the machines is being undertaken by members of the Junior Avia-Club, which is affiliated to the Swiss Aero Club.

NOTICES TO AIRMEN

Holland : Rotterdam Seaplane Station

1. THE following is now available :—

Rotterdam (Waalhaven), Civil Customs seaplane station.

Position.—Latitude 51° 53' N., Longitude 4° 27' E.

Situated to the immediate north of the Waalhaven aerodrome, 5 kilometres S.S.W. of the centre of Rotterdam.

Description.—The area of water suitable for aircraft to alight and take off is "Y" shaped and is marked by buoys and stakes. On account of shallows it is dangerous for aircraft to alight or take off outside this marked area.

Maximum dimensions.—1,100 metres long from N.N.W. to S.S.E. and 100 metres wide; 1,200 metres long from W. by N. to E. by S. and 200 metres wide.

Accommodation, Supplies, Etc.—There are two mooring buoys and a landing stage at the S.E. end of the alighting area. Petrol and oil and minor repair facilities are available at the aerodrome adjoining. There are no sheds or slipways.

A wind sleeve is flown from the large aeroplane hangar at the Waalhaven aerodrome.

Obstructions.—On the S.E. side of the alighting area are the Waalhaven aerodrome buildings, including the aerial lighthouse (72 ft. high), the W/T masts and a chimney (82 ft. high). Ships are frequently moored to the quay running along and parallel to the north side of the aerodrome. A fair amount of shipping may be expected.

General.—A telephone is available at the aerodrome (Rotterdam 11360). The Customs Office is also on the aerodrome, to which access may be gained from the landing stage.

No aircraft may alight at this seaplane station between sunset and sunrise.

(No. 95 of 1923.)

Customs Aerodromes—Air Navigation Directions, 1923, (A.N.D. 4A).

It is hereby notified :—

Directions were issued by the Secretary of State for Air on November 6, 1923, approving the following aerodromes as Customs Aerodromes under paragraph 2 of Schedule VIII to the Air Navigation Order, 1922 :—

Manchester (Alexandra Park), Lancashire.

Southampton.—The whole portion of the River Itchen, south

of a line joining Crosshouse Wharf and the Hard adjoining Royal Oak Public House, and that portion of Southampton Water contained within a line joining the mouth of Weston Lake and Winterton Hall on the south, and a line running due east and west through a point 1,000 ft. north of the southernmost extremity of the Empress Docks on the north, together with the premises of the British Marine Air Navigation Company, Ltd., situate at Elm Road, Woolston, Southampton, Hampshire.

(No. 101 of 1923.)

Aerodrome Control, Croydon and Lympne : Air Navigation Directions, 1923 (A.N.D. 5).

THE following Directions by the Secretary of State for Air were issued on November 8, 1923, under the provisions of the Air Navigation Order, 1922 :—

1. Taking-off of aircraft at Croydon Aerodrome.

(a) All pilots in charge of aircraft about to take-off from the aerodrome will obtain their order of priority in taking-off from the Civil Aviation Traffic Officer on duty for this purpose.

(b) Pilots ready to take-off will await a signal from the Civil Aviation Traffic Officer to do so. Signals will be given to pilots in the order of priority allotted, and on receiving the signals pilots will take-off without undue delay.

(c) In calm weather, indicated by a white ring on the aerodrome in front of the Traffic Office, all aircraft will take-off on some bearing between north-west and west.

(d) In no case will pilots take-off when other aircraft are about to land.

2. Landing of aircraft at Croydon and Lympne Aerodromes.

(a) All aircraft on arriving at the aerodrome will make at least one complete left-handed circuit of the aerodrome before landing, and will continue this circuit until, in their opinion, landing can be effected without risk of collision.

(b) At Croydon Aerodrome, in calm weather, all aircraft will land on some bearing between north-west and west.

3. The above provisions shall be observed in the cases to which they refer by all pilots in charge of aircraft using the said aerodromes.

Cancellation.—Notice to Airmen No. 62 of 1922 is hereby cancelled.

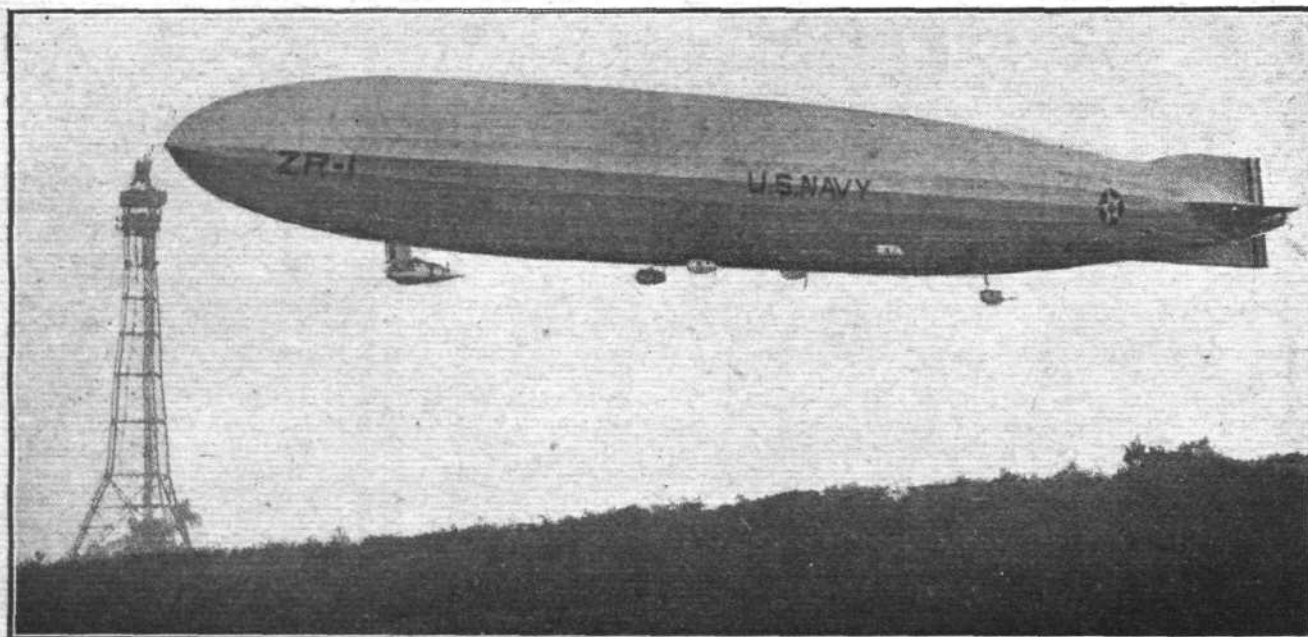
(No. 100 of 1923.)



The Loth Guide Cable

TOMORROW (December 14) a paper is being read before the Institution of Aeronautical Engineers on "Leader Cable Systems for Electrical Steering of Aeroplanes." The paper has been written by M. William Loth, the inventor of the Loth "Guide Cable," but, as the author is prevented from

being present, the paper will be read by Mr. John Gray, B.Sc., M.I.E.E. As the subject of guide cables is one of considerable importance to aviation it is hoped that all who can will attend the meeting, which will be held at the Royal Society of Arts, John Street, Adelphi, London, W.C., at 7.30 p.m.



THE U.S. NAVY RIGID "SHENANDOAH" (Z.R.1) MOORED TO THE MAST AT LAKEHURST, N.J. : A description of this mooring mast appeared in "Flight" for March 1, 1923, whilst Z.R.1 was dealt with in our issue for November 29, 1923.

AN AMERICAN AROUND-THE-WORLD FLIGHT

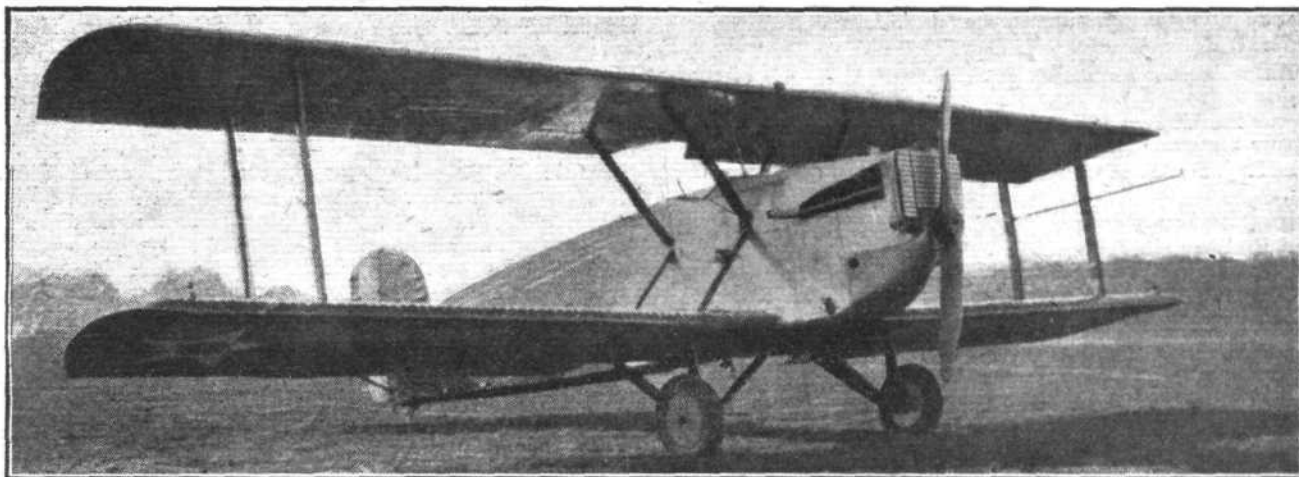
THE U.S. Secretary of War has approved a project, submitted by Major-General Mason M. Patrick, Chief of U.S. Air Service, to send a fleet of four or five Army aeroplanes on a flight around the world during the coming spring and summer months. The route of the flight will not definitely be determined until authority has been received from the various foreign governments whose territorial rights are involved. This matter is now receiving the attention of the Department of State. However, the tentative plans for the flight are as follows:—

A start will be made from Seattle, Wash., about April 1, when they will proceed northward along the coast of Canada and Southern Alaska; across the Aleutian Islands, down through the possessions of Japan; then along the shore of China, French Indo-China, Siam and Burma; across India and up the Persian Gulf; across Turkey and Europe to England; thence north through the Faroe Islands to Iceland and Greenland; from here is made a turn southward along the eastern shore of the continent to Cape Farewell, thence a direct flight to Hamilton Inlet, on the Labrador Coast; along

At various points along the route pontoons will be fitted in place of wheels, and *vice versa*. For example, pontoons will be used from Seattle to Japan, or Calcutta, where wheels will be substituted for the flight across Asia Minor and Europe. From Hull, pontoons will again be used as far as Montreal or Keyport (N.J.), after which wheels will be fitted for the final stage of the journey.

Existing airway facilities will be utilised in the U.S.A., Southern Japan, and between India and London. The intervening sections will be given further study by officers who will proceed over the route prior to the arrival of the machines. Supplies will have to be shipped from America to various points on the route several months in advance of the flight, and for this purpose each division will have a main depôt, with one or more sub-depôts for major items of supply. Petrol, oil, and smaller articles of supply will be placed at practically all stops.

The longest "hop," according to present plans, will be from Attu Island to Paramishiru Island, in the northern part of the



THE AMERICAN AROUND-THE-WORLD FLIGHT: One of the four Douglas "World Cruisers" (400 h.p. Liberty) which will be used in the U.S. Army Air Service around-the-world attempt next spring.

the Canadian shore and up the St. Lawrence River to Quebec and Montreal, and finally to Washington.

The "team" will consist of four officers and four enlisted men well qualified for the long and arduous flight, and the selection of these men is now under consideration.

As regards the machines, these will be entirely of American design and construction, being products of the Douglas Airplane Company, of Santa Monica, Calif. The Douglas "World Cruiser," as may be seen from the accompanying illustration of one of these machines, is a comparatively large single-engined tractor biplane, somewhat similar in general appearance to the Douglas D.T.4 bomber described in *FLIGHT* for November 8 last. Its folding wings, wide-track landing gear, and wing petrol tanks are the principal features. The engine used is the 400 h.p. Liberty.

A "path-finding" expedition of two officers—Lieuts. C. E. Crumrine and C. C. Nutt, both members of the 1920 Alaskan Flying Expedition—is now at work investigating facilities, etc., along certain portions of the route. The proposed route has been sub-divided into six divisions: (1) Washington—Attu Island; (2) Attu—Nagasaki, Japan; (3) Nagasaki—Calcutta; (4) Calcutta—Constantinople; (5) Constantinople—Hull, England; (6) Hull—Washington.

Kurile Islands group, a possession of Japan. Other long stages will be necessary over the Atlantic between the Faroe Islands and Iceland, Iceland and Greenland, and Greenland and Northern Canada, the longest of these being about 700 miles.

As regards the British attempts at flying round the world, no further details as to final arrangements have been announced up to the present. As our readers are aware, three separate schemes are in the field—or, should we say, in the air? These expeditions will be led by Squad.-Ldr. Archibald S. C. MacLaren (R.A.F.); Capt. Tymms and Mr. MacIntosh; and Capt. Norman MacMillan and Mr. Geoffrey Malins. The former is using an advanced type of Vickers "Viking" amphibian (450 h.p. Napier "Lion"), and Capt. Tymms is flying a Fairey seaplane. As regards the latter scheme, it would seem that this will have to be abandoned, as the following news has just come to hand. The steam yacht "Frontiersman," which set out in June to lay dumps of petrol, etc., along the route, had, on reaching San Pedro, California, to be sold in order to meet an unexpected deficit in the funds of the expedition.

LONDON TERMINAL AERODROME

Monday Evening, December 10, 1923

For the past fortnight there has been little activity at the London Terminal aerodrome owing to the unfavourable flying weather.

At the Café Royal, Croydon, on Friday evening, Major-General Sir Sefton Brancker in the chair, the annual aerodrome dinner was held. It was a quieter and more enjoyable affair than in previous years, and several of the speeches were well worth hearing. General Brancker announced that the arrangements for the Million Pound Scheme were now completed, and also stated that 75 per cent. of the personnel, and all the pilots, were under arrangement with the Govern-

ment to be on the R.A.F. Reserve. There is a strong rumour to the effect that Colonel Searle will probably be the managing director of the new company.

Although the Aerodrome Sports Club has now lapsed, the staff of Messrs. Hall and Brenard, Ltd., who have now a wireless factory on the aerodrome, have formed a football club, and played their first match on the aerodrome football ground on Saturday. It is to be hoped that their example will be followed by others on the aerodrome, and that by combining a strong football team could be formed. There is little doubt that a sports club, on however small a basis, would be a great asset to London's air-station.



Married

At the Chapel Royal, Savoy, on December 1, the marriage took place of Air Commodore AMYAS EDEN BORTON, C.B., C.M.G., D.S.O., A.F.C., younger son of Colonel A. C. Borton, of Cheveney, Yalding, Kent, and MURIEL AGNES SLATER, daughter of the late Canon H. B. STREATFIELD, M.A., sometime vicar of St. Mark's, Milverton, Leamington. Wing-Commander W. F. MacNeece, C.B.E., D.S.O., D.F.C., was best man. Among the guests were Air Vice-Marshal Sir Geoffrey and Lady Salmond, Air Commodore and Mrs. Longcroft, Flight Lieut. C. H. Tancred, etc.

Mr. ERIC THOMAS HAULTON ELLIS, late R.A.F., son of the late Major T. J. Ellis, I.A., and Mrs. Ellis, of Kasauli, Punjab, India, was married on December 4, at Lymington, Hants, to MARGARET CAMPBELL HILL, youngest daughter of Mr. and Mrs. PERCY J. SHELDON, of Lymington, Hants, and Southwold, Suffolk.

DAVID CAMERON FAULDS, D.F.C., A.F.M., of the Bengal Nagpur Railway, late Captain in the R.F.C., son of D. C. Faulds, late Loco-Superintendent, B.N. Railway, of Scotstoun Hill, Glasgow, was married on November 7, at Nagpur, Central Provinces, India, to MARY FRANCES (MOLLY) HALLIFAX, daughter of H. F. Hallifax, I.C.S., Addl. Commr. C.P. and Berar.

Mr. J. BERNARD HINCHCLIFF, only child of Mr. and Mrs. John Hinchcliff, of Rhyddings House, Ackworth, was married

recently, at Pontefract Parish Church, to Miss DORIS (MURIEL) BLOMFIELD, eldest daughter of Dr. and Mrs. Wills Blomfield, of Castle Lodge, Pontefract.

Major WILLIAM DICKSON LONG, O.B.E., R.A.F., son of the Rev. F. Long, of Chatton Vicarage, Northumberland, was married on November 24, at All Saints' Church, Cairo, to BEATRICE MARY, only daughter of Mr. and Mrs. A. F. DE ROUGE MONT, of 5, Gloucester Terrace, Hyde Park.

Flight-Lieut. F. J. VINCENT, R.A.F., was married on November 28, at St. Peter's, Cranley Gardens, to GLADYS SALOME DERMER, of 11, Cornwall Mansions, Chelsea, youngest daughter of the late Mr. and Mrs. T. M. Dermer, of Beckenham.

Items

Captain SIR ROSS MACPHERSON SMITH, of Stephen Terrace, Gilberton, South Australia, the hero of the flight from England to Australia, who, with his brother, was knighted for the achievement, and who was killed in a flying accident at Brooklands on April 13, 1922, left £438 personal estate in England, in addition to property in South Australia.

The King received in audience at Buckingham Palace on December 10 Air Vice-Marshal P. W. GAME on his appointment as Air Member for Personnel of the Air Council, and Air Vice-Marshal O. SWANN, on appointment as Air Officer Commanding R.A.F. in the Middle East.

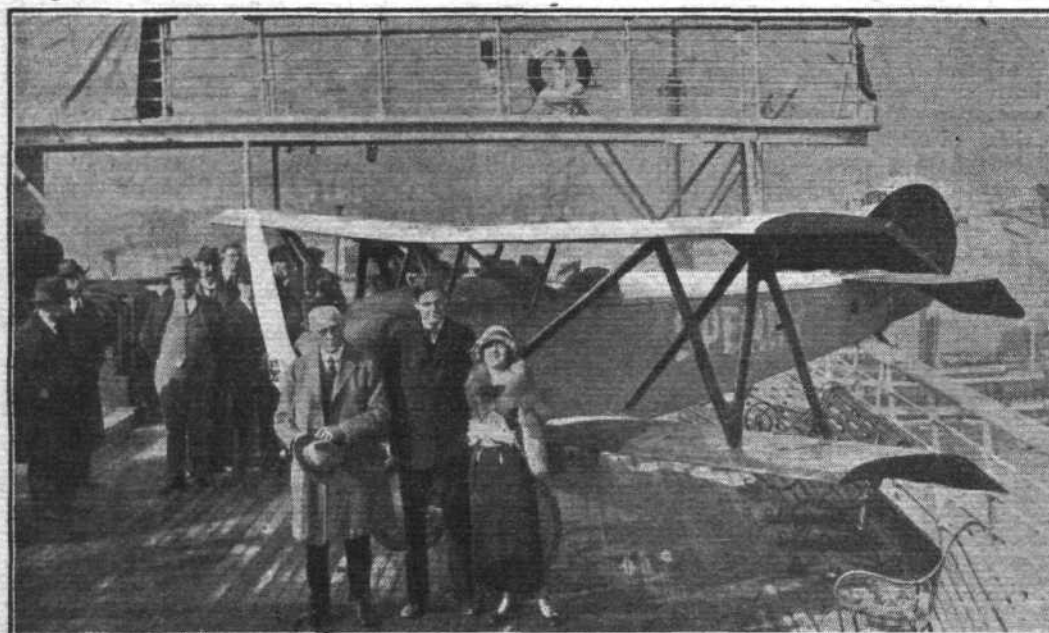
The Curtiss Engine in the Pulitzer Race

In our report on the Pulitzer Race which appeared in FLIGHT for November 8 last, reference was made to Lieut. Allen's forced landing, due to a broken crankshaft. We have just received some further details of this mishap, and in case a false impression as to the reliability of Curtiss engines may be given by our brief mention of this incident, we give below the facts of the case. In the first place, the engine used in the Curtiss triplane involved was built three years ago as an experimental engine on a basis of 325 h.p. at 1,800 r.p.m. low compression, whereas in the race it was being run at 450 h.p. at 2,200 r.p.m. Secondly, the crankshaft in this engine was made from a slab forging, notched out and twisted, which, of course, left the grain of the metal across the crank cheeks where the failure occurred. This same engine has been used

in several experimental machines, and was in one of the 1921 Pulitzer racers. It was employed in this year's Pulitzer Race against the wishes of the Curtiss Company. Incidentally, the production C.D.12 models—which were developed from this engine—have drop forged crankshafts, which up to date have never given any trouble, and have withstood endurance tests of over 300 hours with every success.

The International Air Congress

THE official report of the International Air Congress is to be issued this month. The report will contain all the papers read at the Congress, and also several which time did not allow of reading, as well as the discussions. The price will be £1 5s. (£1 to members). Applications for copies should be made to Lieut.-Col. W. Lockwood Marsh, Offices of the Royal Aeronautical Society, 7, Albemarle Street, London, W. 1.



A flying visitor from America: Lawrence Sperry, the well-known American pilot, with his wife, father, and aerial Flyabout, which he brought with him on his sight-seeing trip to Europe. He is still in this country, and has already made good use of his little 'plane, which is known as the Sperry Messenger, and is fitted with a 60 h.p. Wright L-4 radial engine.

THE ROYAL AIR FORCE

London Gazette, November 30, 1923

Air Vice-Marshal P. W. Game, C.B., D.S.O., is appointed a member of the Air Council as Air Member for Personnel; Nov. 27, vice Air Vice-Marshal O. Swann, C.B., C.B.E.

General Duties Branch

The following Pilot Offrs. on probation are confirmed in rank:—D. S. Brookes; Sept. 15. F. Boston, H. I. Cozens, D. T. H. Hooke, A. S. Lewis, J. H. Pledger, J. R. Pocock, H. M. Schofield, R. T. Taaffe, N. J. Wiltshire; Nov. 14.

The following are restored to full pay from half-pay:—Wing Comdr. D. A. Oliver, D.S.O., O.B.E.; Dec. 1. Flying Offr. C. W. Busk, M.C.; Nov. 22.

Stores Branch

Pilot Offr. A. J. Grant is confirmed in rank and promoted to the rank of Flying Offr.; Aug. 21. Flight Lieut. A. R. Thomas is restored to full pay from half-pay; Nov. 22.

London Gazette, December 4, 1923

General Duties Branch

The following Flying Officers are granted permanent commns. in the ranks stated (Dec. 5):—A. E. Beilby, F. J. Fogarty.

The following are granted short service commns. in ranks stated, with effect from, and with seny. of, Nov. 10:—*Flying Offrs. (for Seven Years on the Active List)*.—L. H. W. Axtell (Capt., Ind. Army, ret'd.), C. W. Dann, M.C. (Capt., Ind. Army, ret'd.), B. W. Duley, M.M. (Lieut., Ind. Army, ret'd.), W. B. O. Fox (Capt., Ind. Army, ret'd.), E. V. Major (Lieut., R.N., ret'd.), H. A. Mullaly (Lieut., Ind. Army, ret'd.), F. L. Woledge (Capt., Ind. Army, ret'd.). *Pilot Offrs. on probation (for Five Years on the Active List)*.—J. A. Bramley, E. A. C. Bushell, J. H. Caulfield, C. F. Caunter, E. R. H. Coombes, C. H. A. Denny, D. J. Dorey, H. St. E. Dracott, C. V. Fevez, T. A. Hale-Monro, G. D. Hamilton, B. W. Hemsley, J. C. Hill, H. A. Le Feuvre, A. C. C. Mason,

M. M. Milu, W. J. Pearson, I. B. Pigott, V. A. C. Ross, P. Slocombe, P. Stainer, C. G. C. Sullivan, H. St. George-Taylor, C. U. G. Tristram, J. A. Wall, St. J. F. Wintour.

Pilot Offr. E. S. Burns is promoted to rank of Flying Offr., with effect from May 1 and with seny. of Nov. 1, 1922. Pilot Offr. on probation R. H. Giles is confirmed in rank; Nov. 14. Observer Offr. L. H. Stewart is restored to full pay from half-pay; Nov. 22.

The following Flying Offr. is transferred to Reserve, Class A (Dec. 5):—J. A. Rudd. Pilot Offr. K. R. Boulton resigns his short service commn.; Nov. 28. Flying Offr. S. McD. Watson (Lieut., R.G.A.) relinquishes his temp. commn. on resigning his commn. in the Army; Dec. 1.

Medical Branch

Sqdn. Leader P. T. Rutherford, O.B.E., is granted permanent commn. in rank stated; Dec. 5. J. M. Rourke, M.B., is granted short service commn. as Flying Officer, with effect from, and with seny. of, Nov. 19.

Reserve of Air Force Officers

Class A.—G. P. Olley, M.M., is granted a commn. in General Duties Branch as Flying Officer on probation; Dec. 4. Flying Officer F. C. Russell resigns his commn.; Nov. 19.

The following Officers are confirmed in rank, with effect from the dates indicated:—*Flying Officers*.—W. Ridley, D.F.C., P. D. Robins, A.F.C., W. H. Statham; Nov. 8. S. A. Dismore, J. Hart, A. N. Kingwill, B. R. Millar, J. H. Paton, A. Russell, G. C. Walker, G. F. Yuill; Nov. 15. E. O'C. Parsons; Nov. 16. *Pilot Officers*.—C. E. F. Searle; Nov. 3. A. V. Blunt, J. G. Butt, C. H. H. Downing, W. A. Foot, R. Reynolds; Nov. 8. W. S. Dailey; Nov. 15.

Memoranda

Major J. Weston relinquishes his temp. commn. on ceasing to be empld., and is permitted to retain his rank; Nov. 22. Lieut. A. G. MacGowan (unempld. list) relinquishes his temp. commn. on enlistment; April 1, 1920.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Squadron Leader R. M. Field, to R.A.F. Depot. 4.12.23, pending disposal on transfer to Home Estab.

Flight Lieutenants: H. Cockerell, O.B.E., to H.Q., Egypt. 27.11.23. G. A. H. Pidcock, to No. 19 Sqdn., Duxford. 15.12.23. F. R. Wynne, M.B.E., to No. 29 Sqdn., Duxford. 15.12.23. E. D. Davis, to R.A.F. Depot. 1.12.23, pending disposal on transfer to Home Estab. C. G. Wigglesworth, A.F.C., to R.A.F. Base, Calshot. 12.12.23.

Flying Officers: G. S. L. Hayward, M.C., to R.A.F. Depot, pending disposal 1.12.23. A. C. B. Harrison, M.C., and E. S. Borthwick-Clarke, both to Record Office, Ruislip. 5.12.23. A. H. Klynes, to H.Q., Inland Area. 24.11.23. W. N. Plenderleith, to Marine and Armament Experimental Estab., Isle of Grain. 1.12.23. C. Ayling, to R.A.F. Depot (non-effective pool). 1.12.23. J. W. C. Harcourt-Vernon, to School of Army Co-operation, Old Sarum. 15.12.23. J. A. Elliott, to No. 2 Flying Training Sch., Duxford. 14.12.23. E. A. Blake, M.M., to R.A.F. Base, Calshot. 26.11.23. H. W. Allen, to R.A.F. Depot, on appointment to a Short Service Commn. 3.12.23. A. B. Cree, to No. 28 Sqdn., India. 21.10.23. F. E. Bond and E. C. Moon, both to R.A.F. Base, Gosport. 11.12.23. G. S. Shaw, P. Harris, L. D. Stewart, and J. G. Peck, all to R.A.F. Depot. 1.12.23, pending disposal on transfer to Home Estab. R. E. Bright, to No. 25 Sqdn., Hawkinge. 15.12.23. L. Martin and A. R. Wardle, both to C. and M. Party, Cattewater. 1.12.23. G. McCormack, to No. 111 Sqdn., Duxford. 12.12.23.

Pilot Officers: R. S. Blucke, to R.A.F. Depot, pending disposal. 1.12.23. E. L. W. H. Alms and C. L. Moores, both to Sch. of Army Co-operation, Old Sarum. 15.12.23. F. A. Briggs and E. S. Brinsmead, both to R.A.F. Base, Calshot. 15.12.23. A. W. Daly, to No. 24 Sqdn., Kenley. 15.12.23. F. Larman and F. B. Robinson, both to No. 2 Sqdn., Andover. 15.12.23. F. C. Marsh, F. J. O'Doherty and R. T. Halliwell, all to No. 4 Sqdn., S. Farnborough. 15.12.23. A. J. R. Moss, to No. 7 Sqdn., Bircham Newton. 15.12.23. C. W. A. Scott and A. R. Woodvatt, both to No. 32 Sqdn., Kenley. 15.12.23. R. W. G. Lywood, to No. 5 Flying Training Sch., Shotwick. 10.12.23. C. Denison, to R.A.F. Base, Leuchars. 26.11.23.

Stores Branch

Squadron Leader F. A. Baldwin, to Egyptian Group, H.Q. 13.11.23.

Flight Lieutenant P. J. Murphy, to No. 4 Flying Training Sch., Egypt. 26.11.23.

Flying Officer R. H. Latham, to No. 4 Stores Depot, Ruislip. 30.11.23.

Medical Branch

Squadron Leaders: A. E. Panter, B.A., to R.A.F. Depot on transfer to Home Estab. 14.10.23. A. J. O. Wigmore, M.B., and P. H. Young, M.B., both to R.A.F. Depot on transfer to Home Estab. 1.11.23. H. S. C. Starkey, O.B.E., M.D., M.A., to H.Q., Malta. 8.11.23. R. J. Ahern, M.C., to H.Q., Egypt. 14.10.23. C. L. Colbran (Dental), to Air Ministry. 14.11.23. R. W. Ryan, M.B., to H.Q., Iraq. 23.11.23.

Squadron Leaders: P. H. Young, M.B., to Central Medical Board, Hampstead. 3.12.23. R. H. Knowles, M.D., D.P.H., to Air Ministry. 3.12.23. C. P. Barber, B. F. Haythornthwaite, M.B., B.A., and C. A. Lindup, all to H.Q., India. 23.11.23. J. K. R. Landells, M.B., to H.Q., Palestine. 23.11.23. J. J. Walsh, to H.Q., Egypt. 23.11.23. F. J. Murphy, M.B., to No. 1 Sch. of Technical Training (Boys), Halton, on transfer to Home Estab. 31.12.23. J. Speak (Dental), to Marine and Armament Experimental Estab., Isle of Grain, on appointment to a Temp. Commn. on being attached from the Army. 1.12.23.

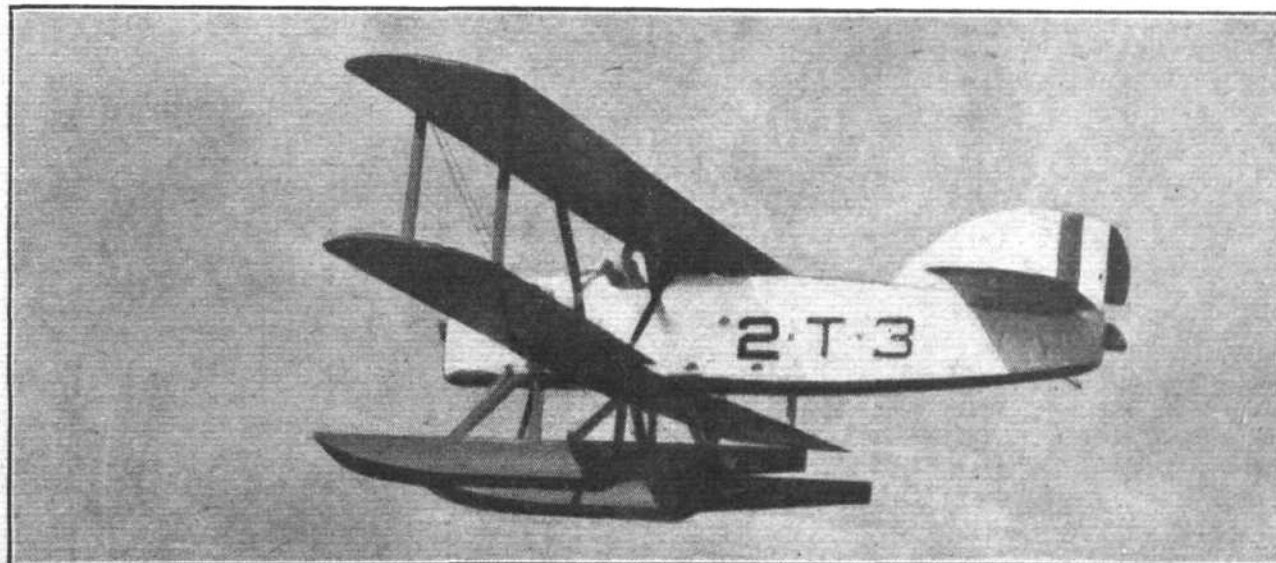
Flight Lieutenants: J. E. Cox, to No. 25 Sqdn., Hawkinge. 21.11.23. W. F. Wilson, M.C., M.B., to R.A.F. Depot on transfer to Home Estab. 21.10.23. C. McC. Jones, M.A., to H.Q., Palestine. 14.10.23. C. T. O'Neill, O.B.E., M.B., and J. W. Harper, M.D., both to R.A.F. Depot on transfer to Home Estab. 1.11.23. J. Wren (Dental), to R.A.F. Depot on transfer to Home Estab. 1.11.23.

Flight Lieutenants: C. McC. Jones, M.A., to Palestine General Hospital. 7.11.23. B. C. W. Pascoe to No. 2 Flying Training Sch., Duxford. 23.11.23.

Flying Officers: (Hon. Flt. Lieut.) G. R. Hall, M.D., to Inspector of Recruiting, Birmingham. 12.11.23. R. W. White, to Research Lab. and Medical Officers' Sch. of Instruction, Hampstead. 12.11.23, on appointment to a short service commn. for short course. J. M. Rourke, M.B., to Research Lab. and Medical Officers' Sch. of Instruction, Hampstead, on appointment to a Short Service Commn., for short course. 19.11.23. R. W. White, to R.A.F. Hospital, Cranwell. 5.12.23. J. G. Russell, M.B., B.A., C. V. D. Rose, and G. Clark, M.B., all to H.Q., Iraq. 23.11.23.

Chaplains' Branch

Rev. H. Thomas, B.A., to Aircraft Depot, Egypt. 3.11.23.



AN AMERICAN TORPEDO-SEAPLANE: A successful twin-float tractor biplane, 400 h.p. Liberty, for torpedo carrying, a number of which have been built up for the U.S. Naval Air Service by the Davis Douglas Company.



BY DOUGLAS B. ARMSTRONG
New Russian Air Stamps

In a country of vast distances, such as Russia, the aeroplane is naturally employed extensively in the maintenance of postal communication. The Russian Government has, apparently, inaugurated a fund for the construction of an aerial fleet, and all air mail letters must accordingly bear a special 10 roubles stamp, the proceeds of which are devoted to this object. It is a large, oblong label, issued imperforate, and in the design of an aeroplane, with the insignia of the Soviet Star on its wings, flying in the dawn.

A set of four stamps of similar character, but consisting of ordinary postage types, with an aeroplane, Russian inscription, "1923," and surtax 20 kopecks, surcharged in red, emanates from Vladivostok. It seems, however, that these stamps are not reserved for use upon air correspondence, but are also available for ordinary postage, although the premium goes to swell the national aerial fund.

Air Stamps of the Year

ACCORDING to an American calculation only 18 new aero stamps had been issued up to the end of October, 1923, as against 81 the previous twelve months. This figure is only concerned with Governmental issues, and takes no count of such items as the semi-official vignettes of the Rouen and Amiens aviation meetings, nor of the German glider post stamps, and the latest Russian propaganda series, so that the actual total for the year must be nearer 36 than 18, exclusive of all air post cancellations, etc., used in conjunction with ordinary postage stamps. The analysis in question puts the grand total of air post stamps issued between January, 1919, and October, 1923, at 205, and the progressive figures are illuminating considered in the light of aerial development. They are:—

1919	..	..	14
1920	..	..	34
1921	..	..	58
1922	..	..	81
1923	..	..	18 (?)

Although there has been a big falling-off in the output of new aero stamps in 1923, they include re-issues for the United States, Switzerland, Esthonia, etc., which tend to show that distinctive stamps have proved a necessary adjunct to the successful operation of the air mail service in those countries.

More Syrian Varieties

HARD ON the heels of the semi-official 1 piastre air stamp of Lebanon, recently noted in this column, comes a set of four high-value postage stamps of France over-printed "Poste Par Avion—Syrie," and surcharged in local currency, apparently for use in the military, as distinct from the civil, aviation service. They comprise: 2 piastres on 40 centimes, red and blue; 3 piastres on 60 centimes, violet and blue; 5 piastres on 1 franc, claret and olive; 10 piastres on 2 francs, red and blue.

Aero Currency

AFTER air stamps—air notes! The writer has been shown examples of two private currency notes issued by the Hamburger Luftschiffhallen Gesellschaft (G.M.B.H.) in August last, circulating amongst their own workpeople in lieu of the fluctuating German currency, and redeemable up to October 15 last. The design of these curious notes shows aeroplanes flying above the towns and steeples of Hamburg.

ANSWERS TO CORRESPONDENTS

E. C. D. (Acton).—The souvenir postcard of the Los Angeles International Aviation Meet of 1912 is not particularly rare, but is probably worth from 15s. to 20s. in good condition.

PUBLICATIONS RECEIVED

British Standard List of Terms and Definitions Used in Radio Communication. No. 166, 1923. British Engineering Standards Association. London: Crosby Lockwood and Son. Price 1s. net; by post, 1s. 2d.

British Empire Exhibition, Wembley, April-October, 1924. The British Empire Exhibition (1924), Incorporated, 16 Grosvenor Gardens, London, S.W. 1.

Berger's Mercury. No. 111. Vol. X. Lewis Berger and Sons, Ltd., Homerton, London, E. 9.

Aeronautical Research Committee, Reports and Memoranda. No. 860 (M. 20). The Effect of Scratches and of Various Workshop Finishes upon the Fatigue Strength of Steel. By W. Norman Thomas, M.A. March, 1923. London: H.M. Stationery Office, Kingsway, W.C. Price 3s. net.

No. 869 (Ae. 105). Notes on the Vortex Theory of Airscrews. By H. Glaucert. December, 1922. London: H.M. Stationery Office, Kingsway, W.C. Price 6d. net.

Technical Notes: No. 155.—Regulations governing the Issuance of Certificates of Airworthiness of Aircraft in France; August, 1923. No. 156.—The N.A.C.A. Recording Tachometer and Angle of Attack Recorder. By H. J. E. Reid; August, 1923. No. 157.—An Impulse Electric Motor for Driving Recording Instruments. By W. F. Joachim; September, 1923. No. 158.—Analysis of Dr. Schaffran's Propeller Model Tests. By Max M. Munk; September, 1923. No. 159.—The Time Lag and Interval of Discharge with a Spring-actuated Fuel Injection Pump. By R. Matthews and A. W. Gardiner; September, 1923. No. 160.—Fittings and Other Structural Parts of Airplanes. By P. Eydam; October, 1923. No. 161.—Preliminary Study of the Damping Factor in Roll. By Lieut. J. M. Shoemaker, U.S.N., and J. G. Lee; October, 1923. No. 162.—The Arithmetic of Distribution in Multi-Cylinder Engines. By S. W. Sparrow; October, 1923. U.S. National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.



AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1922

Published December 13, 1923

- 12,899. A. V. ROE AND CO., LTD., and R. CHADWICK. Metal aeroplanes. (206,865.)
- 12,901. A. V. ROE AND CO., LTD., and R. CHADWICK. Clips for use in aircraft structures. (206,866.)
- 21,253. H. L. COOKE. Apparatus for obtaining photographs from moving aircraft, etc. (184,189.)
- 22,074. RAUL, MARQUIS OF PATERAS PESCARA. Captive helicopters. (184,492.)
- 22,941. H. O. SHORT. Hydro-aeroplanes. (206,947.)
- 23,750. D. J. MOONEY. Aircraft framework. (206,958.)
- 27,606. B. D. THOMAS. Aeroplane engines. (206,988.)
- 27,855. SOC. RATEAU. Means for regulating engine speeds. (189,101.)
- 28,196. H. O. SHORT. Construction of aeroplane wings. (206,998.)
- 31,773. G. CONSTANTINESCO. Fuel-supply systems. (207,034.)

APPLIED FOR IN 1923

Published December 13, 1923

- 1,972. SOC. RATEAU. Cooling of air supply for aircraft engines. (193,017.)

FLIGHT

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